ter of intramural burials and other sanitary questions.

Your paper is not called the "Master-Mason" or the "Journeyman Bricklayer;" neither is it confined to notices on constructional details and technicalities,—but is open, apparently, to the constructive art and science in general, and their interests of all descriptions. Such being, it is apprehended, the true import of the modest title of the "Builder," allow me to beg your assistance, on plea of civil engineering, in calling public attention to a certain description of hazard, of which I see no notice in any of the newspapers that reach this out-of-the-way colony, respecting the canal across the Isthmus of Darien.

When a resident in a certain disturbed district, some years ago, a friend asked my opinion as to the advisability of making investments in land there. In reply, he was recommended rather to bury his money on the edge of Vesuvius or Ætna,—he *might* possibly see it again, in some shape or other; but never more if sunk as he suggested.

This was, of course, said in the spirit of one who considered volcanic investments as somewhat venturous; but who could have supposed that the sober sense of Englishmen would ever dream of laying at least 3½ millions* à *cheval* of the *grand volcanic main or trunk* of the western world, without reflecting on the geological character of the district across which the line, whether for canal or railroad, must necessarily run!

We all know that a canal, especially at the locks, requires every possible care and attention in construction; and, granted that the engineers acquit themselves *perfectly* under all the disadvantages of climate, remote position, expensive indifferent labour and workmanship (with but little command over them), and frequently perhaps unsatisfactory material, who can warrant its remaining stanch for twenty-four hours together in a country (according to Stevens and others) "bristling with volcanoes," and liable *at any moment, at any point*, to convulsive disturbances of earthquakes? A slight shock will start any pair of gates from their fastenings, break up the masonry, unsettle the inverts, and unstanch either the lock or any other part of the undertaking,—especially in that vexatious way that, without throwing down a single brick or block of ashlar, so ruins the work that all must be taken down, to the grievous taking down and reduction of all dividends.

London papers have much artistic ability at easy command, and you, Mr. "Builder," will do the State good service by offering a small premium for the best "composition" illustrative of the effects of "*one night's earthquaking at a canal lock*," accompanied by an essay on the results of such commotions as regards the levels and general capability of holding water.† The like remark applies to railroads: in neither case can I learn that there is any insurmountable difficulty as regards either design or construction generally; though no one has as yet ventured, I believe, to estimate the rate per mile at which locomotive or other engines may venture to work with safety and confidence where the rails may be this way and here to day, that way and there to-morrow.

It is not, of course, meant that this will be the occurrence of every day, every month, or every year; but whatever risks may be permissible in light and temporary investments, the "Doctrine of Chances" must be utterly ignored when the outlay *will be* enormous, and the undertaking *is intended* to be permanent—for aye and for ever.

The hazard of life and capital would thus be almost indefinite, as, far as railroads are concerned; the risk of capital would probably be greater than that of life as to canals in like cases; but whether life or capital be jeopardised abroad, the disturbing effects on English hearts, hearths, and homes would be terribly felt across the Atlantic.

Who would stake 1,000*l.* on the general quiescence of the volcanoes in the region in question for twelve months together? Who then ought to venture 5,000—*possibly* 10,000 *times as much* of either British or American prosperity and happiness—

"Where the slumbering earthquake lies pillowed on fire,—
Where the lakes of bitumen rise boilingly higher,—
Where the roots of the Andes strike deep in the earth,
As their summits to heaven shoot soaringly forth."—*Manfred*.

I beg, therefore, that this question may be *forthwith* submitted to those concerned, and who seem disposed to involve themselves in gambling speculations on the cast and throw of a volcano, with every odds against them. The assistance of the Geological and Geographical Societies may, it is presumed, be confidently reckoned upon in the preparation of a well-detailed plan of the Isthmus of Darien, containing all that has been noticed by Humboldt, Stevens, &c. &c.

Thus far, Mr. Editor—thus far, dear friends, lovers, and countrymen—I have spoken in a style directly in keeping, I hope, with the gravity of the question; but, "as many men have many minds," if the following syllabus of the whole be offered in a somewhat lighter tone, let it be considered as a change made to suit other tastes. Nevertheless, though given in real good humour, it is delivered against these measures in real good earnest—"A free and gentle passage of arms," with anything but barbed lances.

I pray you, then, dear Mr. Editor,—dear friends, lovers, and countrymen,—to study the works of Humboldt, Stevens, and all the writers on these,—the lands of "pitch and toss,"—very diligently; and bear well in mind the following (in some respects) logical series of "truismo-axiomatic" maxims:—

Maxim I.—Never build "castles in the air," for though imagination may at times supply reality, they, at least, want stability.

Maxim II.—Never build "chateaux en Espagne" (be it "old or new") on a sandy foundation; such also are generally wanting in stability.

Maxim III.—Never build a fixed engine-house or a station-house (especially refreshment-rooms) on the *summit* of a volcano; it may be dangerous, and most likely wanting in stability and permanence.

Maxim IV.—Never build any one of the above-mentioned at the *foot* of a volcano;* it will not be less dangerous and scarcely less wanting in stability and permanence. However, on the margin of the beautiful lake, between volcanoes Nos. 13 and 15, is a most tempting site.

Maxim V.—Never choose a residence near—still less immediately over—a powder-mill; it may not blow up, or it may, but the insurance offices would certainly think it a "doubly hazardous investment" of life, limb, and property.

Maxim VI.—Never construct public works, such as canals, with numerous and very expensive locks, railroads, &c. &c. very near, still less immediately over, the hollow ground of unknown, inexplorable, and ever variable subterranean labyrinths, from "any one point of which to any other point" (with all the latitude of Euclid's two first postulates in choice of such points), Plutonic communications and earthquake notices can be delivered with an energy in nowise short of that obtainable by the explosion of gunpowder.

Maxim VII.—Always count the cost of your undertakings, especially when the neighbourhood of gold-mines renders it likely that the amount will be poetically indefinite.

Maxim VIII.—The tarry-at-home speculators need never trouble themselves on the sanitary questions in which their servants, the Local Adventurers, are involved; but as these have some interest in the said questions, "they will find something to their advantage" if they will consult pages 339, 343, Stevens, vol. i. for general statements; and their individual application to even the passing traveller in pages 314, 369, 370.* The mortality among our troops in Ceylon, Corfu, and other places, *whilst employed* on making roads through forests or otherwise disturbing accumulations of decayed or decaying vegetable matter, should not be forgotten.

R. J. NELSON,
Captain, Royal Engineers.

Nassau, Bahamas.

P.S. Since the above was written, the mail steamer has brought the May papers with confirmation of this untoward affair: we have no time to lose,—*Laissez aller! Ventre à terre!*

THE NATIONAL GALLERY AND KENSINGTON.

Mr. DOYLE's opinions on the removal of the National Gallery to the site of Kensington Palace are evidently prompted by a commendable desire to get over a great difficulty, and to extend the advantages already afforded to the public, both of intellectual improvement and recreation; but it is to be regretted that a work so replete with kind intentions should have been written and published without reference to authentic evidence, and, therefore, in direct opposition to the facts.

Supposing that as many persons would visit the national collection if removed to Kensington as at Trafalgar-square, Mr. Doyle says in his letter to Lord John Russell (see THE BUILDER of last Saturday), "My lord, we have the light of experience to guide us in this matter. I have no exact statistics to refer to, but I believe I am correct in stating that nearly as many people visit Hampton Court as our National Gallery at Charing-cross." As Mr. Doyle had not the statistics to refer to, I beg to supply the deficiency, in round numbers, from the returns published by the House of Commons. From them that gentleman will see, that the "light of experience" exhibits results more than fourfold against his opinion. The numbers are—

	1860.		1850.
At the National Gallery ..	503,000	—	775,000
At Hampton Court.....	122,000	—	180,000
Shewing an excess in favour of the National Gallery of	391,000	—	595,000

With, I am happy to say, increasing numbers at both, but that increase constantly in favour of the National Gallery.

If Mr. Doyle intend to pursue the interesting subject, I shall be happy to give him further information on objects which have, for many years, employed much of my time, as secretary to "The Society for obtaining free Admission to National Monuments, &c.," which information has been obtained for the use and benefit of the public.

GEO. FOGGO.

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* The 5,000,000*l.*, quoted by the *Mexico Guardian*, is possibly taken from Stevens's work, as given (at p. 346) by Mr. Bailey, at least two years ago, on "the usual contract prices in the United States, at from 25,000,000 to 35,000,000 dollars. It is hoped that a severer audit and scrutiny will be made in London on the data and computations on which estimates submitted to the British nation are based. The United States Government are at this moment paying 2½ dollars (10*s.* 6*d.*) to carpenters and masons, and 1½ dollars to labourers on the fort now being built at Cay West, at the south-west end of the Florida Reef. What then, may we ask, will be the wages of sandstone, and the dependent prices of work, stubbing in stone, wood, or metal, which in most California? Buford's shipwreck on the Loadstone Mountain was occasioned by all the iron fastenings and bolts being drawn out thereby; in the neighbourhood of such a magnet as the gold country, who can calculate on the number of hands that will be attracted thither *at the expense of the Canal Company*,—and the wages that must be paid to prevent the like desertion by those that remain? No legal document can bind in such cases; the gold attraction of the west will prove to be the long-sought "Universal Moisturum"—capable of dissolving every bond and engagement, and of solving every possible case of contingency. What then becomes of the poor innocent 5,000,000*l.*, with the lockage for the two canals, amounting to 1,000 feet of vertical ascension? The tunnel scheme (p. 343) may turn out to be like "opening a furnace;"—Brunel's shield would be but an indifferent protection against a burst of lava, or boiling water. By the way, Mr. Editor, can you tell us how a "deep" 2-mile cutting and 1 mile of tunnel, "for the largest steamers," is to dispose of 210′ — (60′ + say 10′) = 960 feet of lockage on both sides of ridge of the Isthmus?

† In a pamphlet on the recent tornado in this island (now in the press of J. Day, Melton Mowbray), I have given two sketches of "havoc," which, though by a different agency, may serve as the "motive" for such design, should the first quotation fail as a stimulus to invention.

* The canals may perhaps plead for exception, as the water volcanoes may be reckoned on occasionally for, at least, filling them; nay, a ready supply of boiling water will be a point of economy for locomotives; but mud and cinder volcanoes must be avoided, that is, if we can always predict the ejectaments.

* Stevens, vol. i., pp. 206, 207 (Antigua, Guatemala — "On each side were the ruins of churches, convents, and private residences, large and costly, some lying in masses, some with fronts still standing, richly ornamented with stucco, cracked and yawning fearfully, without doors or windows, and trees growing inside above the walls." . . . "This was the second capital of Guatemala, founded in 1542, on account of the destruction of the first by a water volcano. Its history is one of uninterrupted disasters. . . . "Many severe shocks of earthquake were felt at different periods; the one in 1565 seriously damaged some of the principal buildings; those of 1575, 1686, 1751, were not less ruinous. On the 27th December, 1751, the inhabitants was again alarmed by the volcano, which began to emit fire, and so great was the quantity of ashes thrown out and spread in the air, that the sun was entirely obscured, and artificial light was necessary in the city at midday. . . . Besides earthquakes, inundations, and all sorts of disasters in the years 1800, 1801, 1802, 1717, 1773, "The most melancholy epoch in the annals of this metropolis: it was then destroyed, and as the capital rose no more from its ruins."

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